

ABSTRACT OF THE DISCLOSURE

Transitions among schedulable entities executing in a computer system are tracked in computer hardware or in a virtual machine monitor. In one aspect, the schedulable entities are operating system processes and threads, virtual machines, and instruction streams executing on the hardware. In another aspect, the schedulable entities are processes or threads executing within the virtual machines under the control of the virtual machine monitor. The virtual machine monitor derives scheduling information from the transitions to enable a virtual machine system to guarantee adequate scheduling quality of service to real-time applications executing in virtual machines that contain both real-time and non-real-time applications. In still another aspect, a parent virtual machine monitor in a recursive virtualization system can use the scheduling information to schedule a child virtual machine monitor that controls multiple virtual machines.